



WASHINGTON'S AGRICULTURAL VEGETABLE CHEMICAL USAGE, 2006

NATIONAL AGRICULTURAL STATISTICS SERVICE

United States Department of Agriculture

Washington Field Office • Olympia, WA 98507

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BULB ONIONS

Results of the 2006 Vegetable Chemical Use Survey are presented in the following tables. The survey was designed to collect data on chemical applications made from the end of the 2005 harvest through completion of the 2006 harvest from a sampling of vegetable growers in Washington. Targeted crops in Washington included asparagus, processing carrots, processing sweet corn, dry onions, processing green peas, and strawberries. The probability nature of the survey allowed for estimates that are representative of chemical use on all targeted vegetables in the state.

Survey results include estimates of total area treated, number of applications, rates per application and per crop year, and total pounds of chemicals applied. Data are summarized for the primary nutrients and for the active ingredients of pesticides and other chemicals applied. Pesticide data were collected for specific formulations of active ingredients (trade name products) and then converted to active ingredient. Therefore, the estimates associated with a particular active ingredient may represent applications of several trade name products. Pesticide application rates also reflect partial coverage applications as a result of band, spot, and alternate row spraying techniques.

Seven states were surveyed for dry onions in 2006: California, Georgia, New York, Oregon, Texas,

Washington, and Wisconsin. Surveyed acreage totaled 141,000 acres and Washington accounted for 15 percent of total surveyed acreage.

The seven Program States applied nitrogen to 95 percent of the planted acreage, while phosphate, potash, and sulfur were applied to 77, 53, and 38 percent of the acreage, respectively. Herbicides were applied to 79 percent of the bulb onion acres. Insecticide, fungicide, and other chemical applications were made to 78, 76, and 18 percent of the acres, respectively. Major herbicides used were **Oxyfluorfen**, applied to 69 percent of the acreage in Program States; followed by **Pendimethalin**, applied to 57 percent; and **Bromoxynil**, applied to 25 percent of the acreage. The more commonly used insecticides were **Lambda-cyhalothrin** and **Chlorpyrifos**, covering 34 and 32 percent of the acreage, respectively. **Mancozeb** was the most widely used fungicide and was applied to 58 percent of the acreage, followed by **Chlorothalonil**, applied to 50 percent of the acreage. **Maleic hydrazide**, the most commonly used Other Chemical, was applied to 10 percent of the acreage.

Fertilizer information was not collected on the 2004 Vegetable Chemical Use Survey.



**Bulb Onions: Fertilizer Applications, Planted Acreage & Percentage Receiving Applications,
Program States & Total, 2004 & 2006**

State	Planted Acreage		Area Receiving 1/							
			Nitrogen		Phosphate		Potash		Sulfur	
	2004	2006	2004	2006	2004	2006	2004	2006	2004	2006
	Acres		Percent							
California	45,500	51,000	-	99	-	59	-	19	-	22
Georgia	16,500	14,000	-	100	-	100	-	97	-	**
New York	13,500	14,100	-	98	-	98	-	98	-	**
Oregon	20,500	19,800	-	98	-	92	-	77	-	76
Texas	17,400	18,700	-	95	-	93	-	41	-	54
Washington	20,500	21,500	-	77	-	60	-	61	-	57
Wisconsin 2/	-	1,900	-	99	-	99	-	99	-	**
TOTAL	133,900	141,000	-	95	-	77	-	53	-	38

** Insufficient reports to publish data for the fertilizer primary nutrient.

1/ Refers to acres receiving one or more applications of a specific fertilizer ingredient.

2/ This state was not surveyed in the 2004 Vegetable Chemical Use Survey.

- Fertilizer applications were not collected during the 2004 Vegetable Chemical Use Survey.



**Bulb Onions: Pesticide Applications, Planted Acreage & Percentage Receiving Applications,
Program States & Total, 2004 & 2006**

State	Planted Acreage		Area Receiving 1/							
			Herbicide		Insecticide 2/		Fungicide 2/		Other	
	2004	2006	2004	2006	2004	2006	2004	2006	2004	2006
	Acres		Percent							
California	45,500	51,000	59	68	49	61	49	67	5	9
Georgia	16,500	14,000	52	81	77	91	100	99	**	
New York	13,500	14,100	97	97	96	99	97	99	54	24
Oregon	20,500	19,800	96	95	98	99	82	83	48	65
Texas	17,400	18,700	90	87	90	86	91	67	4	
Washington	20,500	21,500	98	68	92	71	85	**	19	20
Wisconsin 3/	-	1,900		99		98		**		
TOTAL	133,900	141,000	78	79	77	78	76	76	18	18

** Insufficient reports to publish data for pesticide classes.

1/ Refers to acres receiving one or more application of a specific pesticide class.

2/ Total applied excludes Bt's (*Bacillus thuringiensis*) and other biologicals. Quantities are not available because amounts of active ingredient are not comparable between products.

3/ This state was not surveyed during the 2004 Vegetable Chemical Use Survey.

Bulb Onions: Agricultural Chemical Applications, Washington, 2004 & 2006 1/

Active Ingredient 2/	Area Applied 3/		Applications		Rate Per Application		Rate Per Crop Year		Total Applied	
	2004	2006	2004	2006	2004	2006	2004	2006	2004	2006
	Percent		Number		Pounds Per Acre				1,000 Pounds	
Herbicides										
Bromoxynil	89	26	1.2	1.4	0.35	0.227	0.42	0.317	7.7	1.7
Bromoxynil heptan.	-	9	-	1.0	-	0.156	-	0.157	-	0.3
Bromoxynil octanoate	-	39	-	1.7	-	0.340	-	0.592	-	4.9
Clethodim	20	15	1.2	1.3	0.16	0.128	0.19	0.162	0.8	0.5
Fluazifop-p-butyl	32	-	1.0	-	0.10	-	0.11	-	0.7	-
Glyphosate iso. salt	43	52	1.1	1.1	0.46	0.634	0.52	0.681	4.6	7.6
Oxyfluorfen	91	64	1.2	1.1	0.16	0.194	0.19	0.217	3.5	3.0
Pendimethalin	61	58	1.5	1.5	0.74	0.765	1.12	1.152	13.9	14.2
Insecticides										
Chlorpyrifos	15	-	1.1	-	0.85	-	0.97	-	2.9	-
Diazinon	41	-	1.8	-	1.01	-	1.77	-	14.9	-
Lambda-cyhalothrin	52	29	1.9	1.8	0.03	0.030	0.06	0.055	0.6	0.3
Methomyl	18	-	2.4	-	0.86	-	2.06	-	7.5	-
Oxamyl	63	-	2.8	-	0.45	-	1.27	-	16.4	-
Zeta-cypermethrin	37	-	2.4	-	0.05	-	0.11	-	0.8	-
Fungicides										
Chlorothalonil	38	-	2.4	-	0.88	-	2.13	-	16.4	-
Copper hydroxide	31	49	3.3	3.5	0.84	0.616	2.80	2.151	17.8	22.6
Mancozeb	42	61	1.2	3.2	0.81	0.459	0.94	1.450	8.1	19.0
Mefenoxam	-	28	-	1.1	-	0.162	-	0.177	-	1.1
Other Chemicals										
Metam-sodium	-	14	-	1.0	-	172.063	-	172.430	-	501.4

1/ Planted acres in 2004 and 2006 for Washington were 20,500 acres and 21,500 acres, respectively.

2/ Insufficient data to publish data for the following agricultural chemicals: 2004: Herbicides: 2,4-D, Alachlor, Atrazine, Bentazon, DCPA, Glyphosate diam salt, Napropamide, Paraquat, Trifluralin. Insecticides: Azadirachtin, Azinphos-methyl, Clove oil, Cottonseed oil, Dimethoate, Kaolin, Malathion, Methyl parathion, Oxydemeton-methyl, Permethrin, Petroleum distillate, Pyrethrins. Fungicides: Azoxystrobin, Boscalid, Copper amm. complex, Copper oxide, Copper resinate, Copper sulfate, Cyprodinil, Dicloran, Fludioxonil, Iprodione, Mefenoxam, Metalaxyl, Pyraclostrobin, Sulfur. Other Chemicals: Cytokinins, Dichloropropene, Garlic oil, Maleic hydrazide, Metam-sodium. 2006: Herbicides: DCPA, Dimethenamid-P, Fluazifop-P-butyl, MCPA, 2-ethylhexyl, Metribuzin, Sethoxydim, Trifluralin. Insecticides: Azadirachtin, Chlorpyrifos, Cypermethrin, Diazinon, Dimethoate, Kaolin, Malathion, Methomyl, Methyl parathion, Oxamyl, Oxydemeton-methyl, Petroleum distillate, Spinosad, Zeta-cypermethrin. Fungicides: Azoxystrobin, Boscalid, Captan, Chlorothalonil, Copper amm. complex, Copper resinate, Copper sulfate, Dicloran, Iprodione, Pyraclostrobin, Sulfur. Other Chemicals: Chloropicrin, Dichloropropene, GABA, L-Glutamic acid, Maleic hydrazide, Metam-potassium.

3/ Refers to acres receiving one or more applications of a specific agricultural chemical.

Note: Data may not multiply across due to rounding.

Bulb Onions: Agricultural Chemical Applications, Program States, 2004 & 2006 1/

Active Ingredient 2/		Area Applied 3/		Applications		Rate Per Application		Rate Per Crop Year		Total Applied	
		2004	2006	2004	2006	2004	2006	2004	2006	2004	2006
		Percent		Number		Pounds Per Acre				1,000 Pounds	
Herbicides	2,4-D	-	5	-	1.0	-	0.622	-	0.622	-	4.0
	Acifluorfen	3	-	1.0	-	0.17	-	0.18	-	0.8	-
	Bensulide	6	10	1.3	1.6	2.69	3.654	3.61	5.796	30.9	85.5
	Bentazon	5	-	1.1	-	0.42	-	0.46	-	2.8	-
	Bromoxynil	48	25	1.6	1.7	0.22	0.171	0.35	0.285	22.4	10.1
	Bromoxynil heptan.	-	16	-	1.3	-	0.121	-	0.152	-	3.4
	Bromoxynil octanoate	-	22	-	1.4	-	0.195	-	0.272	-	8.2
	Clethodim	8	12	1.1	1.2	0.14	0.132	0.16	0.161	1.7	2.6
	DCPA	6	8	1.0	1.1	3.98	5.740	4.17	6.370	32.3	67.6
	Dimethenamid	5	-	2.2	-	0.72	-	1.58	-	11.1	-
	Dimethenamid-P	4	9	2.0	2.1	0.46	0.696	0.94	1.427	4.6	18.7
	Fluazifop-P-butyl	22	12	1.2	1.2	0.17	0.203	0.21	0.245	6.2	4.3
	Glyphosate iso. salt	21	19	1.1	1.1	0.69	1.038	0.79	1.193	21.9	31.9
	Oxyfluorfen	54	69	2.1	2.0	0.09	0.137	0.18	0.269	13.2	25.9
	Pendimethalin	45	57	1.6	1.6	0.85	0.911	1.36	1.428	81.4	114.6
S-Metolachlor	3	2	1.3	1.1	1.34	1.361	1.71	1.457	7.7	3.4	
Sethoxydim	5	6	1.3	1.7	0.25	0.239	0.33	0.413	2.2	3.6	
Trifluralin	3	*	1.0	1.0	0.93	0.593	0.93	0.593	4.3	0.4	
Insecticides	Azadirachtin	2	3	1.9	2.0	0.008	0.009	0.01	0.018	**	0.1
	Carbaryl	-	*	-	2.2	-	1.289	-	2.862	-	**
	Chlorpyrifos	26	32	1.1	1.0	1.34	1.367	1.46	1.426	51.5	63.1
	Cypermethrin	7	3	1.6	2.4	0.09	0.102	0.14	0.249	1.3	1.0
	Diazinon	23	16	1.9	1.8	0.86	1.906	1.62	3.416	49.2	74.0
	Esfenvalerate	-	*	-	1.0	-	0.035	-	0.035	-	**
	Formetanate hydro.	-	9	-	1.3	-	0.942	-	1.232	-	16.3
	Lambda-cyhalothrin	46	34	2.3	2.3	0.03	0.026	0.06	0.058	3.9	2.7
	Malathion	4	3	1.9	1.1	0.56	1.300	1.10	1.424	5.8	6.1
	Methomyl	33	31	1.8	2.0	0.58	0.656	1.07	1.300	47.9	57.5
	Methyl parathion	7	11	1.9	2.0	0.45	0.418	0.88	0.830	8.6	13.3
	Oxamyl	19	13	2.6	3.0	0.52	0.476	1.36	1.449	33.6	25.8
	Oxydemeton-methyl	6	8	1.6	1.5	0.46	0.502	0.72	0.747	5.5	8.2
	Permethrin	8	5	1.7	1.4	0.14	0.154	0.24	0.221	2.6	1.6
Spinosad	-	9	-	1.3	-	0.099	-	0.131	-	1.6	
Zeta-cypermethrin	26	24	2.3	2.1	0.05	0.042	0.11	0.089	3.8	3.0	
Fungicides	Azoxystrobin	11	6	1.9	2.5	0.15	0.157	0.28	0.390	4.2	3.2
	Boscalid	6	10	1.4	2.1	0.18	0.039	0.25	0.084	2.1	1.1
	Chlorothalonil	45	50	3.8	3.2	1.09	1.064	4.13	3.357	246.5	237.4
	Copper amm. complex	-	1	-	1.1	-	0.316	-	0.345	-	0.4
	Copper hydroxide	28	35	3.1	3.0	0.76	0.718	2.33	2.119	86.7	105.5
	Dicloran	1	2	1.1	1.0	1.47	1.382	1.59	1.431	2.0	3.6
	Dimethomorph	-	8	-	1.4	-	0.191	-	0.263	-	2.9
	Fenamidone	-	5	-	1.7	-	0.169	-	0.295	-	1.9
	Iprodione	20	11	2.3	2.3	0.57	0.552	1.33	1.256	36.1	18.8
	Mancozeb	43	58	4.0	3.5	1.45	1.284	5.76	4.549	333.4	365.4
	Maneb	10	7	2.2	2.0	1.69	1.549	3.78	3.121	51.8	31.4
	Mefenoxam	18	29	1.2	1.5	0.11	0.102	0.14	0.150	3.4	6.2
	Metalaxyl	5	2	1.2	1.4	0.12	0.150	0.15	0.204	1.0	0.4
	Pyraclostrobin	6	9	1.5	2.3	0.14	0.009	0.21	0.020	1.8	0.2
	Pyrimethanil	-	1	-	2.0	-	0.352	-	0.695	-	0.8
Sulfur	3	-	1.9	-	1.87	-	3.59	-	12.9	-	
Other Chemicals	Chloropicrin	3	6	1.0	1.0	41.58	32.452	41.74	32.844	192.2	277.2
	Dichloropropene	4	6	1.0	1.0	175.10	148.198	175.67	149.988	955.7	1,276.9
	GABA	2	3	1.1	2.1	0.09	0.071	0.10	0.150	0.2	0.7
	L-Glutamic acid	2	3	1.1	2.1	0.09	0.071	0.10	0.150	0.2	0.7
	Maleic hydrazide	11	10	1.1	1.0	2.02	1.869	2.22	1.920	32.0	27.7
	Metam-sodium	4	4	1.0	1.0	134.85	147.374	139.32	147.656	819.4	811.5

* Area applied is less than 0.5 percent. ** Total applied is less than 50 lbs. 1/ Planted acres in 2004 for the 6 major states were 133,900 acres and planted acres in 2006 for the 7 major states were 141,000 acres. States included were CA, GA, NY, OR, TX, & WA for 2004 and CA, GA, NY, OR, TX, WA, & WI for 2006.

2/ Insufficient reports to publish data for the following agricultural chemicals: 2004: Herbicides: 2,4-D, Alachlor, Atrazine, Diuron, Ethalfuralin, Glyphosate diam. salt, Napropamide, Paraquat, Simazine. Insecticides: Acephate, Azinphos-methyl, Bifenthrin, Bt (Bacillus thur), Carbaryl, Clove oil, Cottonseed oil, Cyromazine, Dimethoate, Endosulfan, Esfenvalerate, Imidacloprid, Kaolin, Methoxychlor, Neem oil, Petroleum distillate, Piperonyl butoxide, Potassium salts, Pyrethrins, Spinosad. Fungicides: Bacillus subtilis, Basic copper sulfate, Captan, Copper amm. complex, Copper oxide, Copper resinate, Copper sulfate, Cyprodinil, Dimethomorph, Fludioxonil, Fosetyl-al, Phosphorous acid, Triadimefon. Other Chemicals: Busan 881, Cytokinins, Garlic oil, Gibberellic acid, Hydrogen peroxide, Indolebutyric acid, Metaldehyde, Methyl bromide, Monocarbamide dihyd. 2006: Herbicides: Atrazine, Clopyralid, Dimethenamid, Halosulfuron, MCPA, 2-ethylhexyl, Metribuzin, Napropamide, Paraquat, Simazine. Insecticides: Azinphos-methyl, Bifenthrin, Bt subsp. aizawai, Canola oil, Cyfluthrin, Cyromazine, Deltamethrin, Dimethoate, Endosulfan, Ethyl parathion, Gamma-cyhalothrin, Imidacloprid, Kaolin, Methyl bromide, Neem oil, clar. hyd., Petroleum distillate, Piperonyl butoxide, Potassium salts, Pyrethrins, Thiamethoxam. Fungicides: Bacillus subtilis, Basic copper sulfate, Borax decahydrate, Captan, Copper resinate, Copper sulfate, Fosetyl-al, Phosphorous acid, Propiconazole, Sulfur, Thiophanate-methyl. Other Chemicals: Metam-potassium.

3/ Refers to acres receiving one or more applications of a specific agricultural chemical.

Note: Data may not multiply across due to rounding.